

CHERN and RONALD
Application No.: 09/294,539
Page 4

PATENT

21 79. (New) The method of claim 60, wherein the plant is from the
genus *Oryza*.

REMARKS

1. Status of the Claims

In this Amendment, claims 1, 31 and 60 are amended and claims 70-79 are added. Claims 4 and 34 are canceled without prejudice to subsequent revival. Claims 3, 5-12, 14-21, 23-29, 33, 35-42, 44-51, 53-59, 61 and 63-69 were previously withdrawn from consideration by the Examiner. Thus, claims 1-2, 13, 22, 30-32, 43, 52, 60, 62 and 70-79 are pending and under consideration with entry of this Amendment.

2. Support for the Amendments

Support for the amendments to the claims can be found throughout the specification, the drawings, and the claims as originally drafted. For example, support for "at least 80% identical to SEQ ID NO:4" can be found, e.g., on page 9, line 4 of the application. Support for "wherein the polynucleotide sequence, when introduced into a plant, enhances resistance to pathogens compared to resistance of a plant not transformed with the polynucleotide sequence" can be found in the specification, e.g., in original claim 60 and pages 26-27, including page 27, lines 5-6, describing comparing the resistance to a control plant. Support for "wherein a first amino acid sequence comprising the polypeptide binds with a second amino acid sequence comprising SEQ ID NO:2 in a yeast two-hybrid binding assay" can be found, e.g., in the Examples, including, e.g., the sentence spanning pages 29-30 of the specification. Support for new claims 70-78 can be found on, e.g., page 23, lines 1 ("constitutive"), 16 ("tissue-specific") and 17 ("inducible"). Support for claim 79 can be found, e.g., on page 25, line 19 of the specification. Thus, no new matter is introduced by this Amendment.

CHERN and RONALD
Application No.: 09/294,539
Page 5

PATENT

3. *Interview*

Applicants thank the Examiner for the helpful interview of January 8, 2002.

4. *Rejection under 35 U.S.C. § 112, first paragraph*

A. *Enablement Rejection*

Claims 1-2, 4, 30-32, 34 and 60 were rejected under 35 U.S.C. § 112, first paragraph as allegedly not enabled for the recited claim scope. In particular, the Examiner asserted that it was difficult to predict protein function based on amino acid substitutions. Therefore, according to the Examiner, those of ordinary skill in the art would not have been able to determine which sequences have the appropriate function. *See, e.g.*, pages 2-4 of the Office Action. In light of the interview of January 8, 2002, Applicants understand that these issues are resolved. Therefore, withdrawal of the rejection is requested.

In addition, in light of Delaney (*Trends Plant Sci.* 5:49-51 (2000)), the Examiner questioned whether expression of NH1 in plants would lead to enhanced resistance to pathogens. *See, e.g.*, page 5-6 of the Office Action. In particular, the Examiner stated that "[t]he specification provides no evidence as to the function of the protein encodes [sic] by SEQ ID NO:3, nor does it provide any working examples of plants transformed with SEQ ID NO:3 having enhanced pathogen resistance." *See*, page 5 of the Office Action. Applicants respectfully traverse the rejection.

As evidence that introduction of NH1 into plants results in enhanced disease resistance, Applicants provide herewith a Declaration of Pamela Ronald, Ph.D., which describes the result of transformation of plants with NH1 constructs. The declaration demonstrates that expression of NH1 (SEQ ID NO:4) enhances resistance to pathogens when expressed in plants. Sense constructs of the *NH1* gene were generated and transformed into rice plants. Transformants were inoculated with the bacterial pathogen *Xanthomonas oryzae* pv. *oryzae* Korean race1 strain DY89031. Enhanced resistance was observed in the transgenic lines compared to control plants. These data

CHERN and RONALD
Application No.: 09/294,539
Page 6

PATENT

demonstrate that plants with enhanced resistance to pathogens are produced by introducing into the plants a recombinant expression cassette directing expression of NH1.

Accordingly, Applicants respectfully request withdrawal of the rejection.

B. Written Description Rejection

Claims 1-2, 4, 13, 22, 30-32, 34, 43, 52, 60 and 62 were rejected under 35 U.S.C. § 112, first paragraph as allegedly not fulfilling the written description requirement. In light of the interview of January 8, 2002, Applicants understand that this issue is resolved. Therefore, withdrawal of the rejection is requested.

5. Rejection under 35 U.S.C. § 112, second paragraph

Claims 1, 31, and 60 were rejected as allegedly indefinite for using improper Markush language. With entry of this Amendment, the Markush language is canceled, thereby rendering the rejection moot. Withdrawal of the rejection is therefore respectfully requested.

In addition, claim 60 was rejected as allegedly indefinite because the term "enhancing," without a comparative value, is allegedly unclear. The Examiner suggested that Applicants amend the claim to state that the resistance in the resulting plant be compared to a plant that is not transformed with the nucleic acid. Applicants believe that the amended claims should address the Examiner's concerns. Therefore, withdrawal of the rejection is requested.

6. Rejection under 35 U.S.C. § 102

A. Rejection under 35 U.S.C. § 102(e) in light of Uknes

Claims 1, 4, 30-31, 34 and 60 were rejected under 35 U.S.C. § 102(e) in light of Uknes *et al.* In particular, the Examiner alleges that Uknes *et al.* discloses nucleic acid sequences 56-60.8% identical to SEQ ID NO:43. To the extent that the

CHERN and RONALD
Application No.: 09/294,539
Page 7

PATENT

Examiner believes that the rejection applies to the amended claims, Applicants respectfully traverse the rejection.

As amended, the claims are directed to polynucleotides encoding polypeptides at least 80% identical to SEQ ID NO:4. The sequence disclosed in Uknes *et al.* does not appear to encode a polypeptide at least 80% identical to SEQ ID NO:4. Therefore Uknes *et al.* cannot anticipate the present claims and withdrawal of the rejection is respectfully requested.

B. Rejection under 35 U.S.C. § 102(e) in light of Ryals

Claims 1, 4, 30-31, 34 and 60 were rejected under 35 U.S.C. § 102(e) in light of Ryals *et al.* In particular, the Examiner alleges that Ryals *et al.* discloses nucleic acid sequences 56-60.8% identical to SEQ ID NO:3. To the extent that the Examiner believes that the rejection applies to the amended claims, Applicants respectfully traverse the rejection.

The sequence disclosed in Ryals *et al.* does not appear to encode a polypeptide at least 80% identical to SEQ ID NO:4. Therefore Ryals *et al.* cannot anticipate the present claims and withdrawal of the rejection is respectfully requested.

C. Rejection under 35 U.S.C. § 102(e) in light of Ausubel

Claims 1, 4, 30-31, 34 and 60 were rejected under 35 U.S.C. § 102(b) in light of Ausubel *et al.* In particular, the Examiner alleges that Ausubel *et al.* discloses nucleic acid sequences 64.3% identical to SEQ ID NO:3. To the extent that the Examiner believes that the rejection applies to the amended claims, Applicants respectfully traverse the rejection.

The sequence disclosed in Ausubel *et al.* does not appear to encode a polypeptide at least 80% identical to SEQ ID NO:4. Therefore Ausubel *et al.* cannot anticipate the present claims and withdrawal of the rejection is respectfully requested.

CHERN and RONALD
Application No.: 09/294,539
Page 8

PATENT

D. Rejection under 35 U.S.C. § 102(e) in light of Cao

Claims 1, 4, 30-31, 34 and 60 were rejected under 35 U.S.C. § 102(e) in light of Cao *et al.* In particular, the Examiner alleges that Cao *et al.* discloses nucleic acid sequences 56% identical to SEQ ID NO:3. To the extent that the Examiner believes that the rejection applies to the amended claims, Applicants respectfully traverse the rejection.

The sequence disclosed in Cao *et al.* does not appear to encode a polypeptide at least 80% identical to SEQ ID NO:4. Therefore Cao *et al.* cannot anticipate the present claims and withdrawal of the rejection is respectfully requested.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 415-576-0200.

Respectfully submitted,



Matthew E. Hinsch
Reg. No. 47,651

TOWNSEND and TOWNSEND and CREW LLP
Two Embarcadero Center, 8th Floor
San Francisco, California 94111-3834
Tel: (415) 576-0200
Fax: (415) 576-0300
MEH
SF 1297995 v2

CHERN and RONALD
Application No.: 09/294,539
Page 9

PATENT

APPENDIX A

VERSION WITH MARKINGS TO SHOW CHANGES MADE

1. (Once Amended) An isolated nucleic acid construct comprising a polynucleotide sequence encoding a polypeptide at least 80% identical to SEQ ID NO:4, wherein the polynucleotide sequence, when introduced into a plant, enhances resistance to pathogens compared to resistance of a plant not transformed with the polynucleotide sequence, and

wherein a first amino acid sequence comprising the polypeptide binds with a second amino acid sequence comprising SEQ ID NO:2 in a yeast two-hybrid binding assay. [that:

1) is at least 50% identical to a polynucleotide selected from the group comprising SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:5, SEQ ID NO:7, SEQ ID NO:9, SEQ ID NO:11, SEQ ID NO:13, SEQ ID NO:15, and SEQ ID NO:17; or

2) encodes a polypeptide selected from the group comprising SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, SEQ ID NO:14, SEQ ID NO:16, and SEQ ID NO:18].

31. (Once Amended) A transgenic plant comprising a recombinant expression cassette comprising a plant promoter operably linked to a polynucleotide sequence encoding a polypeptide at least 80% identical to SEQ ID NO:4, wherein the polynucleotide sequence, when introduced into a plant, enhances resistance to pathogens compared to resistance of a plant not transformed with the polynucleotide sequence, and
wherein a first amino acid sequence comprising the polypeptide binds with a second amino acid sequence comprising SEQ ID NO:2 in a yeast two-hybrid binding assay. [that encodes a polypeptide wherein the polynucleotide:

CHERN and RONALD
Application No.: 09/294,539
Page 10

PATENT

1) is at least 50% identical to a polynucleotide selected from the group comprising SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:5, SEQ ID NO:7, SEQ ID NO:9, SEQ ID NO:11, SEQ ID NO:13, SEQ ID NO:15, and SEQ ID NO:17; or

2) encodes a polypeptide selected from the group comprising SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, SEQ ID NO:14, SEQ ID NO:16, and SEQ ID NO:18.]

60. (Once Amended) A method of enhancing resistance to pathogens in a plant, the method comprising

1) introducing into the plant a recombinant expression cassette comprising a plant promoter operably linked to a polynucleotide sequence, wherein the polynucleotide sequence[:] encodes a polypeptide at least 80% identical to SEQ ID NO:4, wherein a first amino acid sequence comprising the polypeptide binds with a second amino acid sequence comprising SEQ ID NO:2 when assayed in a yeast two-hybrid binding assay;

[a) is at least 50% identical to a polynucleotide selected from the group comprising SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:5, SEQ ID NO:7, SEQ ID NO:9, SEQ ID NO:11, SEQ ID NO:13, SEQ ID NO:15, and SEQ ID NO:17; or

b) encodes a polypeptide selected from the group comprising SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, SEQ ID NO:14, SEQ ID NO:16, and SEQ ID NO:18;] and

2) selecting a plant with enhanced resistance compared to resistance of a plant not transformed with the recombinant expression cassette.